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MALIGNANT PUSTULE

IN THE

UNITED STATES.

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MALIGNANT PUSTULE.

Malignant pustule is a specific disease, essentially septic and gangrenous, confined in its beginning to the cutaneous tissue and generally to those parts of the surface that are habitually uncovered, and caused by animal poison.

As my chief purpose is to treat of malignant pustule in the United States, I shall give only so much of the history and the nature of this disease derived from other sources as may be necessary to the elucidation of my subject. Celsus and Paulus Ægineta both described malignant pustule under the head of carbuncle. Ambroise Paré, in the sixteenth century distinguished it from plague. Yet it was not until the latter part of the eighteenth century that physicians began to appreciate its nature. Thomassin, Boyer, Fournier, Montfiels, Veson, Lance-rotte, Chambon, and especially Enaux and Chaussier contributed to make the medical world acquainted with the nature of the malignant pustule. During the present century, Bayle, Bidault, Villiers, Reynier, Rayer, Branell, Wagner, Raimbert, Manoury and Salmon, and recently Gaujot and Bourgeois, have given valuable monographs and cases illustrative of epidemics.

It is the general conclusion of persons who have had the best opportunities for investigating the nature of malignant pustule, that the germ of the disease consists in an animal poison, usually contracted by man from cattle or their remains. In support of this view it is found that as a general rule, the disease most frequently occurs among knackers, tanners, veterinarians, persons engaged in the removal of offal, and stevedores, particularly those employed in handling hides from certain districts and countries where the diseases of cattle most prevail. In other cases it has been attributed to eating diseased animal food.

Certain herbivorous animals, especially beasts of pasture, are subject to a disease called malignant carbuncle, characterized by

the occurrence of a large uncircumscribed emphysematous tumor, which yields to pressure and crepitates under the fingers, and exhales a peculiar putrid odor. In its progress it turns black in the centre and appears as if burned or charred; it is infiltrated with a yellowish colored fluid and distended with a fetid gas. This disease is capable of being transmitted from one animal to another by inoculation, and by absorption to man, in whom it runs a violent and dangerous course. MM. Salmon and Manoury, of France, have vainly attempted to limit the term malignant pustule to this disease only. Other and later writers, with greater opportunities, have demonstrated that malignant carbuncle and other ulcers which occur in cattle are the eruptive symptoms of grave febrile disorders depending upon a diseased state of the blood, and always consecutive to febrile symptoms; and the inoculation of man with matter from such an ulcer is only equally dangerous with the blood, and possibly the milk of the same animal in the febrile state before the ulcer appeared. Indeed cases have occurred where the blood of animals not previously known to have been diseased has caused malignant pustule in man by absorption. It is well known that the milk and even the butter, as well as the flesh of cows affected with the *trembles* is poisonous to man, and has been the cause of many deaths in the Western States. And Professor Drake, in his Memoir of the Trembles, also traces several deaths from this disease to absorption in flaying and trying out the tallow of cattle that had died of it. But on the other hand there are many examples produced by French writers, of persons who have eaten of the flesh of animals that have died of malignant carbuncle who have not contracted the disease. In a few rare instances, intestinal or pulmonary absorption has appeared to have given rise to *fièvre charbonneux*, and the subsequent appearance of the pustule externally. But such cases are extremely rare and exceptional. Maurand (Histoire d'une Maladie très singulière, &c., in Hist. de l'Acad. des Sciences, 1766, i, p. 97), relates some cases of malignant pustule produced by the flesh or blood of over driven cattle, although their bodies presented no appearance of disease. It would appear that the flesh of such animals may be eaten with impunity when cooked, but that if the blood or raw flesh be applied to the wounded skin or even to the unbroken skin in some cases, diffuse cellular inflammation is excited or malignant pustule produced, which frequently terminates fatally; and M. Du-

puy states (Revue Médicale, 1827, ii, p. 488), that the malignant pustule or carbuncle of cattle may be produced by applying to a wound *the blood of an animal that has died of gangrene of the lungs.*

It is the opinion of some observers that malignant pustule may occur spontaneously without any contact with poisonous animal matter. But from the fact that diseased animal matter is known to cause the great majority of cases, many ways will suggest themselves by which inoculation might take place without any knowledge of the circumstance on the part of the person affected.

A favorite dog or cat (animals not subject to the disease) might easily transport it; a butcher's knife or hook might convey the poison from diseased to otherwise healthy meat; or even a fly might carry on its tiny feet all that is necessary for a fatal inoculation.

As a general rule, cattle which feed on prairie meadows are exempt from malignant disease; while those which are fed upon dried clover, lucerne and vetch, are peculiarly liable to carbuncle. The same may be said of cattle fed upon semi-decomposed grain, the refuse of distilleries and breweries. All such things are actively predisposing agents to the blood diseases of cattle, and indirectly liable to engender malignant pustule in man.

The earliest record of malignant pustule in the United States, I have met with, is by Dr. C. W. Pennock, in 1836 (American Journal of Medical Sciences, vol. xix). Dr. Pennock published four cases, with two plates, and records that in 1834, an epizootic of *murrain* prevailed in the vicinity of Philadelphia, which was very fatal. It finally extended to the city, and especially prevailed among the cattle that fed on the commons. Several persons who had been engaged in skinning animals that had died of murrain were affected with malignant pustule. One patient who came under Dr. Pennock's care, September 2, 1834, stated that "while skinning a cow dead of murrain, a musquito bit him on the back of the hand. With the other hand which was covered with the blood of the cow, he brushed away the musquito and rubbed the itching bite." Four days afterwards, a vesicle of the size of a large pea, distended by red serosity, accompanied by a slight itching, but no pain, was observed on this spot, his general health was not then affected. On September 8, six days after the inoculation of the virus, the vesicle had increased to the size of a five cent piece, was of a purple color, the itchin

became intolerable, the patient ruptured it by scratching, and a small quantity of red serum was discharged. Next day the vesicle was much enlarged, and numerous small vesicles appeared around it. On the 10th, it became black and depressed in the centre, borders elevated, soft, and of a dark red or purple color. Next day the central dark point had increased to one-third of an inch in diameter; patient experienced languor, chilliness, want of appetite, and was obliged to discontinue work; thumb and hand were then swollen, the absorbents red and painful, and the lymphatic glands at the elbow-joint and armpit much enlarged.

September 12—On the middle portion of the back of the thumb of the left hand, is a circular spot three-fourths of an inch in diameter, of a deep purple color, depressed in the centre, elevated on the borders; surface indurated, except at the circumference; perfectly devoid of sensibility, and surrounded by vesicles containing dark red serosity. The thumb, hand, and forearm swollen, of a rose color; the absorbents marked in their course by red lines extending to the armpit, are hard and painful; a lymphatic gland of the size of a pigeon's egg is seen immediately above the elbow, and four smaller in the axilla; pain felt in the entire limb, and is much aggravated by movement. No pain in the head; intelligence perfect; sensibility unimpaired, except in and around the pustule; tongue coated in the centre with light fur; thirst; no pain upon pressure of abdomen; no nausea; constipation; surface of body dry and hot; pulse 90, of good volume; no other symptoms worthy of remark.

Treatment.—Cauterization of pustule and borders with lunar caustic, followed by application of poultice made of lye and rye flour. Saturnine lotions to the rest of the arm; sulph. magnes. one ounce.

13th—No symptoms of fever; bowels open; the eschar of pustule firm, and resembles soaked and blackened leather; erysipelatous redness and pain of the arm much diminished.

The subsequent treatment of the arm was altogether local; sponging the arm with saturnine lotions, and the frequent application of alkaline poultices to the seat of the pustule. The erysipelatous inflammation disappeared in four days, the lymphatic glandular induration in a week, after which he resumed his usual occupation."

Other cases occurred that could be traced with almost equal accuracy, though the person affected could not account for the

means of absorption. "At periods varying from three to eight days after contact with the dead bodies of the animal, a vesicle of the size of a grain of millet appeared on the point of inoculation, without having been preceded either by heat, prurience or tension. This vesicle gradually augmented; was attended by a sensation of itching, but no pain; its color was dark brown or livid; broke, either spontaneously or by rubbing, and discharged a few drops of serosity. This period of the disease occupied from twenty-four to forty-eight hours." The succeeding stages of the disease—the formation of a central tubercle, gangrene and sloughing—were of irregular duration, sometimes being merged into each other, and varying from a few hours to several days.

The next particular account of malignant pustule to be found in American medical literature, is by Dr. William M. Carpenter, of Jackson, Louisiana. Dr. Carpenter's essay was first published as a *Thesis* in 1836, and subsequently in the *Southern Medical Journal* for 1839. Besides giving a full account of eight cases, from a large number which fell under his observation, the first one occurring on the 20th of August, 1835, he gives a history of the disease in that section of the country extending back to the time of its first settlement by the French. According to this account, malignant pustule seems to have been first noticed in this country, among the deer feeding on the salt marshes near the sea, west of the mouth of the Mississippi river. It afterwards attacked the cattle of the planters on Bayou Lafourche, returning annually, and gradually extending its ravages over those districts in which the benefits of grazing had been appreciated and turned to account by the intelligent and enterprising farmer. "This disease," writes Dr. Carpenter, "though it appears to have been of comparatively early occurrence in this region, is now (1839) seen in nearly every part of the State, seems not to have been even noticed in the medical annals of America." Dr. Carpenter fully endorses the usually entertained French view as to the causes of malignant pustule—that it is never spontaneously developed in man, that it is generally a purely local disease in its beginning, appearing in the majority of cases to have a local and external cause, as the contact of substances that have been impregnated with the virus arising from carbunculous diseases, or from touching a part that is the seat of malignant pustule. The chief agents however, of communication, are probably flies,

which have fed upon the carcasses of animals dead of *charbon*. "There are," he remarks, "many well attested cases of the disease having occurred after the bite of these carnivorous flies, which have led many to suppose that it was a peculiar insect whose sting or bite produced the disease, whereas, they only inoculated it from other animals." "There is no predisposition, nor is the supposition of the existence of predisposing causes warranted, for whenever inoculation is effected in man, the disease will occur independently of idiosyncrasy or predisposing causes." His conclusions are that "the disease is essentially gangrenous from the commencement, that is, that there is gangrene before the phytænæ make their appearance, and that these vesicles are the result instead of the forerunners of the gangrene. The consequence of this is, that any attempt to bring about resolution must fail, as there will necessarily be a slough of this gangrenous part, which will be smaller the earlier a line of demarcation is established between this and the sound parts."

With the exception of a single case published in the New Orleans Medical Journal, by Dr. S. B. Wilkinson, we have no other record of the disease in that region until 1850. In the New Orleans Medical Journal for 1851, Dr. Jno. H. Baldrige gives an account of a *new* epidemic in the same section, which, he states was like that described in the first book of Homer's Iliad—made its first assault upon mules—

"On mules and dogs the infection first began,
And last the vengeful arrows fixed on man."

"Some of our planters," Dr. Baldrige writes, "have lost several thousand dollars worth of horses and mules, and an immense number of cattle. Hogs that eat of the dead carcasses soon die of the malignant pustule. Dogs meet with the same fate. It is generally thought that a good rain will check the disease. Planters generally treat it, when observed early, by cutting freely into the tumor, and filling up the wound with a mixture of equal parts of *soft soap and quick lime*. Several cases have been communicated to man by the bite of flies."

The earliest account of its occurrence in the northern portion of the United States, was in 1842, yet this account was not published until 1859. In the Boston Medical and Surgical Journal for 1859, Dr. Samuel B. Wells, of Middleborough, Schoharie county, New York, reports a case to which he was called in the

practice of Dr. Peter S. Swart, in the village of Schoharie in 1842. Dr. Wells' description of this case accords with the description of Bourgeois and other late authorities. In the same paper, Dr. Wells reports seven other cases that had fallen under his notice since 1855. Dr. Frank H. Hamilton has recently informed me that he was also called to see two cases, and heard of some others in the vicinity of Buffalo, about the year 1842. These cases occurred during the prevalence of murrain among cattle in the same region at the time, and they were regarded as true malignant pustule. To the best of his recollection all the cases he heard of proved fatal.

In the Boston Medical and Surgical Journal for 1852, Dr. Pierson of Salem, Mass., reports several cases, and among the rest, in detail the case of the Hon. Robert Rantoul, whose disease was at first thought to be erysipelas. The pustule in this case was situated on the forehead, and was not traceable; but from its perfect analogy with subsequent cases that were traceable to inoculation with dead animal matter (hides). Dr. Pierson considered that it was a true case.

In the New York Journal of Medicine for 1854, Dr. Willard Parker of New York, reports four cases of "*a peculiar form of malignant inflammation of the lips and face, resembling malignant pustule.*" Case 3, may be taken as a type of the whole.

"Mr. W. aet. 26, married, furniture dealer, of good habits, and hitherto perfect health, discovered a small pustule on the under lip, near the right angle of the mouth, on the 2d of April. It was tender on pressure, and had a hard base, but attracted no attention. During the night the disease extended considerably, involving the whole lip and the right side of the face in a hard, livid and painful swelling. On the evening of the second day his physician first saw him, and found the lip greatly swollen, of a livid color, and the seat of burning pain. He scarified the parts for the purpose of local depletion, and also applied leeches. The swelling continued to extend, involving the right side of the neck and face to a great extent. I saw him on the 7th, at 11 o'clock A. M. His symptoms were then most unfavorable, pulse 130 per minute, intermittent every seventh or eighth beat, weak and small; respiration rapid, moaning; skin warm and moist; urine free; pupils much dilated; mind clear. He complained of oppression about the chest, and had not been able to obtain sleep. Both lips were involved in the swelling, were hard, livid,

and insensible; the whole side of the face and neck was similarly affected, the eye being nearly closed. The frontal vein was livid, red, and prominent, and the veins of the cheek were also visible, as if distended. The treatment consisted of deep scarifications of the lips, and yeast poultices to the part, with anodynes and stimulants. I visited him again at 6 o'clock P. M., and found him rapidly failing; treatment of no service. He died the same evening."

Dr. Parker states that the object of his communication in reporting these cases, was to call special attention to this disease, which from the *frequency of its occurrence* in his own practice, and other cases which had been related to him, seemed to be *very prevalent*. Although Dr. Parker's description and treatment of the disease which he reports, accords with that which is given by French surgeons who have written upon malignant pustule, he nevertheless concludes, that "it differs from true malignant pustule, to which in its origin it seems allied by attacking persons who have not been affected by poisonous wounds, or who have been liable to the introduction of animal poisons into the system."

In a report of the proceedings of the *New York Medical and Surgical Society*, to be found in the *New York Journal of Medicine* for 1859, Dr. John Watson relates the case of a young English woman, who was suffering from one of those "*virulent pustules*" on the face, commonly called malignant pustules. "Three or four days before she had observed a small and slightly painful pimple upon the upper lip, which she had pricked with a needle. This seemed to aggravate it, and when the part was somewhat swollen, she had gone to a neighboring apothecary, who had with a lancet scarified the mucous membrane of the lip. When Dr. Watson saw her there was considerable tumefaction about the part, extending to the angle of the lip and upwards towards the eye for two or three inches. The mucous membrane was corrugated, swollen and nodulated, the pulse 120 to the minute, the tongue coated, and the swollen part quite painful. He now thought of making a free incision into it, but as it appeared to him that no sufficient indication existed for so doing, he ordered an evaporating lotion for the cheek, and gave internally spirits of mindereri and solution of morphia.

This treatment was kept up for two days, with the result of producing diaphoresis and some sleep. At the end of forty-eight

hours, during which little change had occurred in the inflamed spot, he found, on everting the lip, points like detached pustules, similar to those showing themselves in anthrax when about to break. He now made a free incision into the lip, which gave exit to blood and matter. The next day the pulse was higher, but she was evidently better, and in a week convalescence was fully established. The incision was undoubtedly of great benefit to her. This disease, he remarked, has not as yet been fully and accurately described; resembling anthrax in many respects, and the real *pustule maligne* in others, it differs in many particulars from both, and should not be confounded with them in description. The disease generally appears about the face, near the mouth, and is often fatal, and had been so in three cases which he had seen."

"Dr. Parker agreed with Dr. Watson as to the essential difference between this species of virulent pustule and the pustule maligne of the French writers. It occurs, he believed, in the same persons and diseases in which we most commonly meet with paronychiæ, anthrax and furuncle, to all of which it bears some resemblance."

"Dr. Post regarded it as very similar to carbuncle, from which it differs only in the fact that it occurs in loose cellular tissues; he had seen the bite of a spider cause very much the same kind of inflammation, which was followed by gangrene."

"Dr. Buck had had in his practice four cases of *pustule maligne*, of which three had died. Two had shown themselves on the upper lip and cheek, one on the chin and lower lip, and one on the cheek near the mouth. The disease partakes, he thought, of anthrax and erysipelas, and the pustules mentioned in Dr. Watson's case often show themselves at the place where the inflammation makes an apparent effort to point and discharge. The swollen part, however, is tawny and shining, not bright like erysipelas."

"Dr. Van Buren had a case in a young married lady, which, commencing in a small pimple on the lower lip, ran a very rapid course and destroyed life in forty-eight hours after he saw her."

By the Providence Journal of Feb. 4, 1859, we learn that three deaths had recently occurred in the city of Providence, from malignant pustule. The alarm caused thereby, among those who considered the disease a "new" and "strange" one, induced Dr. E. M. Snow, of the city of Providence, to give the following brief

description of the disease, in the paper referred to, in order, if possible, to prevent unnecessary alarm: "The pustule, unless it arises from inoculation, is generally on the *under* lip. It commences with a slight pimple and with considerable itching. Very soon a thin bloody fluid is found in the pimple, and it is surrounded with a livid or purple areola or ring. It also rests upon a hard base which may be felt as a small lump under the skin; but has very little, if any pain. Unless arrested early, the swelling rapidly increases, poisonous pus is formed, and being absorbed, passes into the blood and poisons the whole system. It is not necessary to describe the further progress of the disease, or its treatment. Our only object is to enable others to recognize it in its earliest stages, and also to prevent unnecessary alarm from common pimples which occur so frequently."

About this same period of time, a case occurred in my own practice in this city, a brief abstract of which may be found in the published Transactions of the Society.* I was sent for to see Mrs. R., February 6, 1859, a married lady, æt. 34, with a nursing child. She had never been very robust, but enjoyed tolerably good health. I found her complaining of general *malaise*, and of a hard livid pimple at the vermillion border of the left upper lip, near the corner of the mouth. This however, she said, was better; that it had itched a good deal at first and was very painful, but since the pain had subsided, she thought it was only a boil, and that it would soon be well. Her attention was first called to it two days before, as a dark, red pimple, on account of its incessant itching. The centre was of a dark, purple color, denuded of cuticle and exuding a thin, dark serum. Her carelessness about it, however, tended to divert my own attention, and I failed to discover at that time the relation of the "pimple" to her irritable, feeble pulse, 112 per minute, white furred tongue, with elongated papillæ, anorexia and failing strength. Her bowels had not been open for the last two days, "yet she had eaten nothing." She complained of slight flatulence, but would not have thought of it without inquiry. She scarcely had any milk for the baby (five months old), and had to feed it. For the last two nights she had been very restless, felt too tired to be up, and no better for lying down. I prescribed the tincture of rhubarb, half an ounce, immediately (12 o'clock M.), and the same dose to be repeated at bed time, if necessary. Directed a bread poultice to be put to the lip, and for her to take any simple food

* Kings County Medical Society.

she could, with tea: and that she should not attempt to nurse the child. The next day, the pimple had extended considerably in circumference—extending across the lip and involving the right alae nasi. The lip was also much thickened, and exceedingly hard. The centre of the swelling was now dry, and a little depressed. The whole was surrounded by an areola, similar to a vaccinia of the tenth or eleventh day. She had taken the second dose of rhubarb, since which her bowels had been freely open once, at which time she fainted away; this was followed by sick stomach, and the ejection of a cup of tea which she had taken a short time before. Her condition was in no respect better, and her present appearance—with reflection on her case for twenty-four hours—left no doubt in my mind that I had to deal with malignant pustule. I incised the lip freely from the under side, expecting to relieve the tension by the flow of blood, but in this I was disappointed. The tissue cut more like frozen flesh than anything I can liken it to, and the only blood that followed was a little from the capillaries of the surface. I applied lunar caustic to the divided portion, and freely over and around the swelling. Directed a flax seed meal poultice, and prescribed a capsule containing two and a half grains each of the sulphate of quinia and camphor, and the sixth of a grain of the acetate of morphia, to be given every three hours; rum punch and beef tea as much as she could be induced to take.

Third day.—The disease has progressed more rapidly than during the twenty-four hours last preceding. It now involves whole of upper lip and extends up to the right cheek, the areola proportionately expanded; no appearance of suppuration in the divided portion; the centre is gangrenous with margin gradually extending and disappearing in the hardened circumference; patient is weaker, takes medicine regularly, and a little punch and beef tea every two or three hours, apparently to gratify her attendants; appears perfectly passive; complains of nothing but extreme lassitude and inability to rest; skin hot, pulse 120, and a little harder; I again scarified the tumor through the gangrenous portion on the cutaneous surface, and applied caustic as on the day before; ordered yeast to be mixed with the flax seed meal for poultice; the same remedies to be continued internally, and the bowels to be opened by a soapsuds enema.

Fourth day.—No abatement; but on the contrary, the disease still extending; now up to margin of right orbit, loose tissue

round right eye infiltrated with serum, and eye closed; the left eye however, remains uncomplicated, and the pustule has not extended in that direction; pulse the same in frequency, but more feeble; tongue dry and brown; has taken a little more food on account of thirst, but does not seem to think enough of anything to ask for it; says she is going to die; continued same treatment.

Fifth day.—The circumference of the pustule seems not to have extended, but the hardness has, as also the gangrene; there is still no suppuration; pulse more contracted and irregular in force; and, although on account of thirst she has taken more than half a pint of rum and nearly as much wine during the last twenty-four hours, it seems to have had no effect whatever; she has also taken about a pint of beef tea.

Sixth day.—She loathes food, and takes her medicine with great reluctance; the tumor has changed but little in its appearance since yesterday; the gangrenous portion is breaking down, but there is no appearance of pus.

Seventh day. Mind is wandering; pulse 130, irregular and very small; skin hot, tongue dark brown and dry; still takes a little fluid, but frequently ejects it; she gradually sunk into a low delirium, and died on the morning of the eighth day. Nothing that was done for her seemed to have the slightest influence over the straight forward fatal tendency of the disease.

In the transactions of the society for the following July, Dr. Enos reported the following case:

Mr. L——, aged 18, of previous good health and habits but strumous parentage, his father having died of consumption; was taken ill on Wednesday, July 22, 1859; a little pimple appeared on the chin just below the right angle of the mouth; it began to swell, and the swelling extended to the whole lower lip; he was a little chilly and felt depressed; on Sunday he called at the office of Dr. Kelly, who saw and recognized the difficulty and prescribed for him; applied a poultice to the part; the pimple or little boil, began to discharge a little pus; the lip had discolored blisters on its vermilion border; I saw him in consultation with Dr. K. first on Monday evening; the lower lip was immense, and the swelling had extended down over the chin and out upon the left cheek; was firm and brawny to the feel, and of a dingy hue; the mucous membrane was sloughing from between the lip and gums; the pulse was rapid and weak, 120 to 128;

several little apertures were seen on the lip; we divided it freely from below the vermilion border through its entire substance, to the apex of the chin; it bled, but discharged no pus; the tissues did not retract and the cut sides were in contact; we gave him sulph. quinia, gr. ii, every four hours, and intermediately ten drops of muriated tincture of iron, milk punch, wine, whey, and beef tea, and a pulv. Doveri at night; he was very anxious about himself, apprehending a fatal result; Tuesday morning no better; on removing the yeast and flaxseed poultice which we had applied to the part, the skin had united so that it required some force to open the wound; the right half of the lip looked a little better and the pustule also; swelling less, and on pressure, a little white matter could be forced from several openings in the lip; the swelling, however, had extended on the left cheek and down the neck; was hard and more livid; we extended the incision through the border of the lip, put a tent in the wound and reapplied the poultice; treatment continued; had considerable pain in his bowels so that opiates had to be given; his bowels had been freely evacuated by blue pills and oil.

Wednesday, 8 o'clock, A. M.—Had slept but little; *face more livid*, pulse 130. *5, P. M.*—Sinking; lip cool; pus oozes from several points on the lip, no pus from the incision; did not deem it best to cut more. Prof. Parker saw him at 8 o'clock in the evening. He advised, though rather reluctantly, making two free incisions in the cheek, which I did, one four and the other three and a half inches long, through the skin and cellular tissue. He supposed we should find pus, but none followed the knife. They bled more freely than the first incision; but blood was dark. He advised the continuance of the same medication, but the patient gradually sank and died the next day at 2, P. M."

In the discussion of this case by the members of the society present at the time it was reported, it was elicited that malignant pustule appears to be a recent disease in Brooklyn; several cases having occurred within the last three or four years, while no one present recollected any cases as having occurred here at an earlier period. Dr. Cullen stated that he had had three cases. And that having seen many cases of the same disease as an epidemic in Mexico, he regarded it as true malignant pustule. He also mentioned that he had never known a case where pain in the abdomen or chest did not occur in the course of the disease.

At the meeting of the society for December, (1859,) three additional cases were reported, all of whom recovered; one by myself, on the back of the hand, and two by Dr. Isaacs, on the face. These, I believe are all the cases that have been reported in the Transactions of the Society. During the same year, however, (1859) in the month of August, I saw another case in the practice of Dr. Alexander Cochran. This occurred in a stevedore, who had been recently handling hides from South America. According to Dr. Cochran's account of it: "The pustule commenced as a very small vesicle on the right wrist anteriorly. It progressed rapidly and gave him great pain. A physician was called, who thinking the disease to be erysipelas, ordered the application of twenty-four leeches, to be followed by a poultice of cow manure." Dr. Cochran "saw the patient about twelve hours afterwards, and found him delirious; arm much swollen, and gangrenous from the shoulder to the tips of the fingers—the axilla of the same side threatened with gangrene. Pulse 100, skin hot; tongue brown, and secretions checked. Had the arm well cleansed with tepid water, ordered a yeast poultice and stimulants, with quinine and iron internally." I saw this case with Dr. Cochran in the fourth week of its existence. The whole cutaneous and cellular tissue of the anterior portion of the forearm had sloughed away; the muscles, vessels, and nerves being completely disintegrated. Above the elbow the same condition existed for at least half of the superficial surface. This patient ultimately recovered. But the sloughing was so extensive, that the part was not healed over until the twenty-first of October—it having commenced on the third of August.

Another case occurred in my practice in March last; the pustule being on the upper lip. This patient recovered. I have recently seen another case in the practice of Dr. D. E. Kissam. Mrs. W., aet. 61, the mother of several children, having always enjoyed good health. On the 16th of December last, she sent for Dr. Kissam, who being laid up with a boil, requested me to see her for him. I found her in bed complaining of general indisposition, and particularly of a painful swelling on the back of the right forearm, midway between the wrist and elbow. The space complained of was half as large over as the hand, swollen and of a dark, red color. It had itched and smarted a good deal, and she had laid over it the night before a cloth wet with the tincture of arnica. This however increased the smarting, pro-

bably in consequence of the broken cuticle by rubbing, and she was obliged to remove it. The whole swollen surface was stained with the arnica, but of darker color over the centre, and exceedingly tender. She had first noticed the swelling two days before, and feeling rather unwell, had taken a dose of castor oil, which, although it had operated, had failed to relieve her. She had scarcely slept any for two nights; was now irritable and shivery on exposure; had no appetite; tongue covered with white fur; skin hot; pulse 100. Prescribed a flax seed poultice to arm, and as her bowels did not appear to have been sufficiently open, citrate of magnesia to be taken in small quantities during the day, as a febrifuge aperient; and a mixture of squills, compound solution of opium and the spirits of mindereri, at night. On the next day, found that although the swelling had not increased, it was of darker color, and over the centre there was a purple spot as large as a dime, nodulated and vesicular. She had rested but little, and loathed food; bowels had been open once; tongue more thickly coated; skin hot and dry; pulse 112. Prescribed two and a half grains each of camphor and sulphate of quinine, with the fifth of a grain of the acetate of morphia, to be taken every three hours, and poultice to be continued.

18th. The swelling has rapidly increased—extends quite up to elbow and nearly around the arm; gives continued aching pain, though less tender to the touch. The centre of the swelling is now quite dark, while the border is marked by a bright areola; has only taken two doses of the medicine, on account of its causing sick stomach, and taken no food but a little cracker and tea; constitutional symptoms worse, I now made an incision about four inches long through the skin and cellular tissue lengthwise, and through the centre of the pustule. There was no bleeding except from the angles of the incision, extending to the inner boundaries of the areola, and the cut edges remained in contact on account of lost contractility in the divided part. To the cut edges and to the bottom of the incision, I freely applied lunar caustic, and painted the surface over and around with tincture of iodine. Directed the anodyne to be continued as often as necessary, to allay irritability and to procure sleep at night, and *cider* (the patient having expressed a preference for it), *ad libitum*, with beef tea or chicken soup, if she could take it; yeast to be mixed with the flax seed meal for poultice.

19th. Dr. Kissam was able to take charge of the patient. We

found her complaining of much less pain in the arm, though evidently more prostrated on account of some nausea and continued disinclination to take food; had taken considerable cider however, and had kept it down without trouble. She slept under the influence of the anodyne. The swelling is still extending up the arm, above the elbow, and on the surface of it, near the incised part, are several groups of small vesicles of dark purple color; skin hot; pulse 108; tongue drier, and brown in the centre. Lunar caustic was again freely applied to the incision, the whole painted over with iodine, and the poultice continued; the anodyne solution to be given as often as necessary, and quinine again ordered in sugar coated pills—two every two hours.

20th. Areola has extended nearly up to shoulder and axilla. Just above the elbow on the anterior aspect of the arm, following the location of a group of vesicles, there appears to be a new centre of gangrene. On making an incision through it, the tissues were inelastic, and as in the first instance, without bleeding; patient complains much less, though she does not appear as well; pulse weaker, 112; tongue dry and brown; has had less sickness of stomach, and been able to take more food, and her medicine regularly. Caustic again applied freely over the whole surface of swelling, as well as to divided portions; poultice and other treatment continued with stimulus; bowels to be opened by comp. colocynth pills.

21st. Superficies of swelling the same, terminating abruptly in a bright, red areola near the shoulder; gangrene however, extending from both centres, threatening elbow and above the joint on the front of the arm. The second incision extended and caustic again applied to raw surfaces; other treatment continued.

22d. Suppuration commencing; probe passes freely for two inches under cutaneous tissue; muscles denuded at first *point d'appui*. Continued stimulating tonic treatment; omitted caustic, and continued poultice to arm.

26th. Same treatment has been continued; the subcutaneous cellular tissue, and that which dips down between the muscles and the superficial fascia, so far as apparent by the incision and the use of the probe, destroyed and sphacelating, with an abundant discharge of pus; edges of the divided skin dark and flabby; near the border of the swelling the previous redness of skin has given place to a yellow tint, similar to that which is frequently observed following ecchymosis. This was the last time I saw the

patient, but from Dr. Kissam I learn, that with the exception of the parts immediately surrounding the pustules—covering a space of about two by three inches around the first *point d'appui*, and for a space about half as large for the second—the skin has retained its vitality, and still covers a slowly granulating surface. The superficial fascia and cellular tissue have been wholly destroyed, and the skin has been kept alive by the capillaries of its substance, independent of any connection with the subjacent tissues. The use of the arm will be much impaired.

Besides the cases here given during the interval of time now gone over, “I have heard of ten other cases in this city, and of several in New York, which have not been reported. Meanwhile cases have been reported from other places by Dr. E. D. Ayres, of East Creek, N. Y.; Dr. D. Dana, of Lawrence, Mass.; Dr. J. J. Ellis, of Bristol, R. I.; Dr. J. F. Noyes, of Waterville, Maine; Dr. D. W. Wainwright, N. Y., and Dr. Collins, of Providence, R. I.

The cases that I have selected and given in detail, are for the purpose of illustrating the various forms of the disease, as given by different writers. According to Bourgeois, the latest authority,* malignant pustule appears most commonly on the face, and next on the hands, neck, and arms, and rarely on the trunk. Its *symptoms* may now be summed up as follows:

It first appears in the form of a painful swelling, which after a lapse of time varying from one to three days, rarely more, develops upon its central part, a small reddish or purple spot, accompanied with itching. In the course of twelve or fifteen hours more this spot changes into a bleb or vesicle, not usually larger than the head of a pin, containing a reddish brown or yellowish fluid. Owing to the continued itching, the vesicle is ordinarily ruptured soon after its appearance; if otherwise, it dries up in about thirty-six hours, leaving the exposed derma dry, and generally of a livid color. Itching now ceases; and after a time varying from a few hours to a day, the centre of this discolored and denuded surface begins to grow hard, and becomes surrounded by an inflamed areola covered with numerous small vesicles similar to the vesicle which first appeared. The middle of this areola is depressed, and the color varies from yellow to black. It is now hard in the centre, and more painful than at any other stage. It is, however, a remarkable feature of malig-

* *Traité Pratique de La Pustule Maligne et de L'œdème Malin ou des deux formes Du Charbon Externe Chez L'Homme*, par J. Bourgeois, etc., etc., Paris 1861.

nant pustule that severe pain is generally absent; and this character, so different from all other acute inflammations of the skin, is a valuable negative diagnostic of the disease. During the next twenty-four or forty-eight hours the subcutaneous tissue becomes involved; the tumor strikes deeper and rapidly extends, yet it is so indurated as to be easily circumscribed, and its confines determined without difficulty. Meanwhile the central point, now of brown or livid hue, exceedingly hard and insensible, becomes gangrenous. If the disease ceases to make further progress, an inflamed circle of vivid redness now surrounds the gangrenous portion; the tumefaction which had before rapidly extended diminishes, and the patient experiences something like an agreeable warmth accompanied by a pulsatory motion of the affected part. The pulse which had before grown irritable and feeble revives, strength increases; and if there has been some degree of fever, accompanied with nausea, as occasionally happens, it is resolved into a gentle perspiration and the nausea ceases. Suppuration now sets in between the living and the dead parts of the pustule, and the detachment of the gangrenous portion leaves a suppurating surface of variable extent in different cases. Should the disease on the contrary tend to an unfavorable issue, generally no suppuration takes place; the gangrene spreads rapidly from the centre to the circumference of the tumor; the pulse becomes smaller and more contracted; the patient complains of extreme lassitude with an inability to sleep, is attacked with fainting fits, and becomes passive as to the result: there is disinclination to take food or medicine, or to have anything done, and there is a total loss of appetite; the tongue is dry and brown; the features shrink; the skin is parched; the eyes are glassy; cardialgia and low delirium premonish the fatal termination.

Such are in general the ordinary phenomena of malignant pustule, usually terminating in a period of time varying from five to eight days. Exceptional fatal cases have been recorded however, varying from 24 hours to 16 days. In the suddenly fatal cases, the forces of the constitution are so quickly and entirely subverted by the malignancy of the disease, that few symptoms are manifested; the powers sink under it as it were without resistance.

Another variety of malignant pustule which commonly attacks the hands or arms, is of less regular character, in some cases

presenting an appearance and running a course very similar to circumscribed phlegmon, while in others it is exceedingly violent and fatal in a few hours; and in other cases still, it runs on for several weeks and finally proves fatal rather from the effects of the disorder than from the disease itself. In the majority of these cases there is intense local pain in the affected part from the commencement, with enormous swelling and more or less redness. A small vesicle or pustule forms in the centre and proceeds to take on a gangrenous character. Sometimes it becomes circumscribed and limits its action to the skin; but at other times numerous phlyctenæ cover the surface, and the destructive inflammation burrows into the cellular tissue which envelopes the muscles, completely surrounding and disintegrating these organs, which sometimes become soft, black, and gangrenous; the blood-vessels and nerves also become involved, and, as a necessary consequence, the death of the part ensues. It is in this second variety of malignant pustule that arise the chief difficulties of a correct *diagnosis*.

Of all the diseases that man is heir to there is none in which an early diagnosis is more important than in malignant pustule. It is indeed of such moment that the lapse of a few hours or a day may entail the most deplorable consequences. At its first appearance it might be mistaken for the hard, inflamed and painful swelling sometimes produced by the *bite of certain insects*—hence it has been called *puce maligne*, or malignant flea bite. These bites, however, may always be recognized by the presence of a minute yellowish-colored point in the centre. Furuncle, or common boil at its commencement, has no central bleb or vesicle similar to malignant pustule, which, moreover, is speedily surrounded by an emphysematous areola studded with vesicles very different from anything that takes place in furuncle. When malignant pustule has progressed for two or three days and gangrene to a greater or less extent has taken place, the disease can only be confounded with *cancrum oris* with the *bubo of plague*, or with *gangrenous erysipelas*. Malignant pustule differs from *cancrum oris*, or the gangrenous affection of the lips and cheeks occasionally occurring in children, in that this latter disease begins on the *inside* of the mouth and only extends consecutively to the skin—just the converse of malignant pustule. From the pestilential bubo of plague, it is chiefly distinguished by the premonitory symptoms of plague and the number and situation of

the pustules. Malignant pustule is rarely multiple. In plague, there are generally several pustules usually attacking the superficial glands of the groins, armpits and neck, and preceded by fever.

The second variety of malignant pustule above described, is not unusually represented by English and American writers under the head of *Phlegmonous*, or *Gangrenous Erysipelas*. Nunnely describes the same disease as a variety of erysipelas, under the head of "cellular variety." "This," he writes, "like that which equally involves both skin and cellular membrane, varies much in violence, and owing perhaps to its being principally seated in the cellular membrane, which is the special locality of true phlegmon, in mild cases it presents us with a very near approach to circumscribed phlegmon. The mischief varies from little more than a whitlow, or a suppurating absorbent gland, to that form of the disease which induces a destruction, spreading over almost half the subcutaneous cellular membrane of the body. So also does the rapidity of the disease differ much; *in some cases it proves fatal in a few hours, in others not for many weeks*, when the patient dies rather from the effects of the disease than from the complaint itself. In the *majority of cases* the constitutional symptoms are *preceded by some local affection*, but not invariably, for at times the constitutional derangement appears without any local complaint."* It is evident from this extract that Nunnely considered the malignant pustule which usually attacks the hands and arms, and the "cellular variety" of erysipelas one and the same disease.

Wilson, in his work on Diseases of the Skin, wholly omits the consideration of malignant pustule, while he, like Nunnely, gives the local symptoms of this disease under the head of erysipelas phlegmonoides. But it is useless to pursue these omissions, we are all familiar with them, from our inability to find malignant pustule treated of to any extent in English or American works. Erysipelas is generally ushered in by febrile symptoms, and neither is the phlegmonous or any other variety that we are acquainted with, preceded by a pustule or sanguinolent vesicle in a particular point. Gangrenous erysipelas only becomes such through excess of inflammatory action. From its commencement it has a dark red, but smooth and soft surface, and the vesications which form upon it rarely or never occur earlier than on the

* Nunnely on Erysipelas, p. 147, American edition.

fourth or fifth day of the disease, and are irregular in form and size. Malignant pustule, we have seen, is the converse of this. It *starts*, as it were, with a pustule that is speedily surmounted by a single vesicle; the seat of this becomes nodulated, and proceeds as from a common centre, the vesicle being quickly followed by gangrene without tendency to suppuration. The fever in malignant pustule generally follows the appearance of the local disease, and is irritative and asthenic; whereas, in erysipelas the fever precedes the local disease, and is sthenic from the beginning, while the local disease runs an irregular course and has a decided tendency to suppuration and abscess. These are important differences, and generally sufficient to distinguish the one from the other.

The *pathology* of malignant pustule* is distinguished by a fluid state of the blood, which is usually very dark colored. The texture of the heart is softened, and its surface covered with ecchymosed spots; the veins are sometimes softened and ecchymosed, and usually contain clots, some of which are black, while others are yellowish-white, and of gelatinous consistence. The lungs are covered with superficial ecchymoses, presenting over their surface a number of deeply penetrating black spots, produced by local sanguineous infiltration. The inner coat of the stomach and intestines presents in different places corresponding to the course of the vessels, prominent dark colored spots, formed by blood effused between the inner coats and the peritoneal covering. The villous coat of the stomach is also occasionally found ecchymosed; the liver and spleen are gorged with dark blood, and the kidneys surrounded by emphysema. Microscopically, M. Robin, after repeated examinations, was unable to discover anything in particular indicative of its nature, only the granular appearance which is characteristic of mortification by gangrene. The special characteristic of the disease seems to be that it is *antipurulent*.

Prognosis. It is always grave, yet like other gangrenous disease, it is frequently self-limited, and may get well spontaneously. Such a result however should never be relied upon, for its tendency in most cases is fatal, especially is this the case, when the disease attacks the face, head or neck. On the extremities, it is less dangerous to life, but frequently involves great loss of sub-

* As given by Bourgeois.

stance and deformities which may subsequently require surgical aid for relief.

Treatment.—Induce and promote suppuration, and sustain the powers of the constitution. To this end, as soon as the nature of the disease is ascertained, the vesications formed on its surface should be opened, the fluid contents removed, and the denuded part covered with lint saturated with the hydrate of potassa or other caustic. Six or eight hours afterwards this may be removed and a poultice applied; and twenty-four hours after this, if pain and burning heat have nearly or quite ceased and no areola has formed, it may be safely concluded that the caustic has effectually permeated the whole of the diseased tissue, and that it will proceed to healthy suppuration by the continued application of poultice. But if, on the contrary, a hard and deep-seated painful tumor has formed around the primary seat of the vesicle, we may take it for granted that the disease is extending. The tumor should be forthwith divided through its whole width and depth, by a crucial incision, the gangrenous parts removed, if any have formed, and caustic thoroughly applied to the divided surfaces. This proceeding is equally requisite when the slough which forms on the centre becomes hard and impenetrable like a piece of dry hide, and this must be removed to admit of the unimpeded action of the caustic. Scarifications and cauterizations, with the continued application of poultices, should be repeated daily until suppuration is established, or until the extent of the pustule is clearly defined. Internally, the bowels being first cleared by mild cathartics, quinia four or five grains every three or four hours with wine and brandy, and as much food as the patient can be induced to take, (there being generally disinclination to take food) and opiates with camphor, as much as may be necessary to allay pain and produce sleep, constitute the basis of treatment. In spite of everything, the peculiar malignancy of this disease, frequently proceeds straight on to a fatal termination; and this is sometimes the case even when the local disease seems to be checked in its progress.

In conclusion, it cannot have failed the attentive observer, that malignant pustule in the United States has been concurrent with epizootic disease; and, that so far as the prevalence of epizootic disease is concerned as a necessity for the existence of malignant pustule, both epidemically and sporadically, the conditions seem to be no less applicable to the United States than to France.

With *murrain*, it has several times prevailed; and recently in various parts of the northern portion of the United States there appears to be reason sufficient to attribute it to the prevalence of *pleuro-pneumonia* among cattle, which, in some cases at least, according to the evidence before the legislative committee of Massachusetts, resulted in *gangrene of the lungs*—a disease, which, according to M. Dupuy, (*loc. cit.*) was observed to cause malignant pustule in man as long ago as 1827. For the occurrence of malignant pustule in New York and Brooklyn, I ascribe it to the most universally attributable of all causes, malignant carbuncle. For the evidence of the existence of this disease, I only need refer to any of the various reports of sanitary committees for several years past; or, if incredulous in regard to these reports, to the *swill-milk* stables in our midst, which are a disgrace to any civilized community.

BROOKLYN, N. Y., *January 21, 1862.*

